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A New B.V.A. Year

WITH the meetings of newly-appointed standing committees on Wednesday and Thursday of this week, culminating in yesterday's meeting of the Council, a new year in the Association's history has begun. Strictly speaking, it opened a few weeks ago when Mr. Callender was raised to the Presidential office, but it is now, when he has presided for the first time over a full Council that one or two fields of endeavour may appropriately be surveyed.

The creation of two new committees, those for farm live-stock and for small animals suggests the clearer emergence of factors already familiar in the Association's policy. With the forward march of agriculture, and with the parallel advances in veterinary research and clinical techniques, the maximum integration of the profession's work with that of the farmer is of primary importance. Preventive medicine on a herd basis, as Sir William Slater reminded students of the Royal Veterinary College recently, is the emerging picture of what well may become the veterinarian's primary duty. But that duty impinges upon other fields which call for our constant and increasing attention: diet, management, husbandry, and genetics, among others. In this last, the Association will continue to be closely concerned to bring about the veterinary supervision of A.I. centres, in some of which the position at present leaves much to be desired. The words of the last President may be recalled in this connexion: " Let there be no doubt about it—transmissible disease is a most important factor in any insemination service . . . It is the view of the Association that if the A.I. service is to obtain the maximum safety and efficiency, closer and more intensive veterinary supervision is required than is at present provided in many cases."

Consideration of the health of the farm animal leads inevitably to the question of meat and its proper inspection. The Association's long endeavours to bring the meat inspection service in England and Wales more closely into line with that of most Western nations are still far from being realised. The arguments in favour of veterinary participation in meat inspection are too familiar to call for repetition; but, to recall even one, the inability to forge a chain from the veterinary surgeon who has tended the live animal, through the abattoir and the laboratory back again to the farm, continues to rob the practising veterinarian and his research colleague of information of almost limitless value.

For the new Small-Animals Committee there remains, among other matters, the intractable problem of those animal welfare societies who do not, in the main, employ veterinary surgeons in their clinics, thus making it impossible for poor people to obtain a service of comparable quality to that available to those better off. Since this matter remains the subject of negotiations between the B.V.A., the Royal College, and the principal society concerned, comment would be premature. It can only be hoped that the long and patient discussions between the parties will reach conclusions which may be set before the profession and found acceptable.

Another branch of the Association's work which has become notable within recent years is the arrangement of conferences upon topics of current interest. As readers know, the Technical Development Committee has organised a conference on supplements and additives in animal feeding-stuffs which opens on November 22nd. These conferences provide an opportunity not only for a broadening of our knowledge of practical problems of moment, but have the effect of bringing us into close and friendly relationship with outside bodies—in this case the manufacturers of animal feeding-stuffs—whose work and interests impinge upon our own. They are thus, among other things, a useful contribution to the Association's public relations, as are the links, which continue to be strengthened, between ourselves, and the medical profession, the farmers' unions, the pharmaceutical industry, and others.

To speak of the work " of the Association " is to imply the fundamental importance of unity and of enthusiasm. The strength and vitality of the B.V.A. can only be a reflection of the strength of its constituent Divisions. Regular attendance at Divisional meetings, including the provision by principals of facilities to enable assistants to attend meetings at reasonable intervals, is fundamental to the health of the Association as a whole, as is also the highest measure of professional harmony. The small size of our profession throws especial responsibility upon every member of it. Only by the faithful discharge of that responsibility can the Association prosper, and this new veterinary year become a milestone on our way.

Microphthalmia in Piglets with Avitaminosis A as the Probable Cause

BY

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Introduction

REPORTS on anophthalmia and microphthalmia in piglets are rare in British literature although several observers elsewhere have commented upon the condition.

Some authors have ascribed a hereditary cause to this condition (Kosswig & Ossent, 1932; Buchanan Smith *et al.*, 1938). Hale (1933) described the condition in most detail, in an experimental Duroc-Jersey gilt which farrowed 11 piglets with anophthalmia having been on a vitamin A deficient diet for 160 days prior to service. Further investigation showed that the condition could be reproduced by keeping gilts on a vitamin A deficient diet (Hale, 1935).

Maneely (1951) inferred, from histological preparations of the eyes from cases of microphthalmia reported as due to a sublethal gene, that the fundamental upset was interference with the formation of secondary organisers. Wilson's work (Wilson *et al.*, 1953) on vitamin A deficient rats supports this view as ocular defects may be prevented by administration of vitamin A at the stage when the eye primordium is actively developing. Cardiovascular, genitourinary, and skeletal defects due to maternal vitamin A deficiency, also occur if the deficiency was present at the time of active organ formation.

Hubrig (1954) also described blindness in newborn pigs associated with either microphthalmia or the so-called " goggle eye " and locomotor disturbances and attributed it to avitaminosis A.

In the outbreak to be described, microphthalmia was not the sole abnormality observed; a few piglets also exhibited skin lesions and mild genital or skeletal deformities.

History

The animals involved in the outbreak were in three groups.

Group I

This group consisted of three gilts and a sow of the Landrace breed. They had been running with a pedigree Landrace boar (A) during the summer months of 1955 in a walled orchard. As a result of drought and heavy stocking the orchard was almost devoid of herbage. The sow and gilts were removed to a farrowing pen when they were due.

According to the history furnished by the owner the first gilt farrowed on August 12th and produced a litter of dead macerated foetuses which were not examined. The second gilt farrowed on August 14th. Seven live piglets were born, all showing microphthalmia, and were, of course, blind. None survived three days, and the sow herself died a month later from an undetermined cause. Little importance was attached by the owner to the loss of these two litters, but blind piglets born to the gilts in Group II at this stage resulted in the veterinary surgeon being consulted.

The remaining gilt in Group I farrowed on September 4th giving birth to seven blind and microphthalmic piglets. The sow farrowed on November 13th giving birth to eight piglets all similarly affected (Table I).

Group II

This group consisted of nine gilts of mixed breeding in-pig to a recently acquired young Large White boar (B). These gilts had been out on a bare paddock in early spring before being housed with the boar in a cattle court. The boar was removed after two months while the gilts were removed to pens only when farrowing seemed imminent. These gilts farrowed between August 22nd and September 30th. All gave birth to blind and microphthalmic piglets with one exception. The particulars of the litters are listed in Table II opposite.

TABLE I

Number		Served by	Farrowed	Total number of piglets	Stillbirths	Survivors	Remarks
L 23	Litter sisters	Landrace Boar A.	Sept. 4th	7	3	2	2 crushed.
L 24			Aug. 14th	7	0	0	All died in first three days. Sow died in one month.
L 26			Aug. 12th	Macerated mass of stillborn piglets not counted.			
L 9	Sow, unrelated to above	Landrace Boar A.	Nov. 13th	8	1	7	All microphthalmic, one with ankylosed carpus, one over at the knee.

Boar A's litters to other sows have been normal.

FIG. 1.—Head of piglet showing anophthalmia.

FIG. 2.—Head of piglet showing microphthalmia with hyperkeratotic facial lesions.

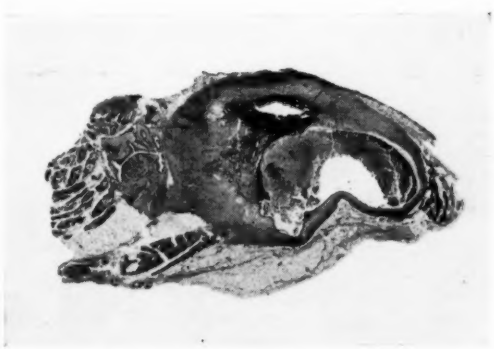

FIG. 3.—L.S. of eye. H. & E. × 4.

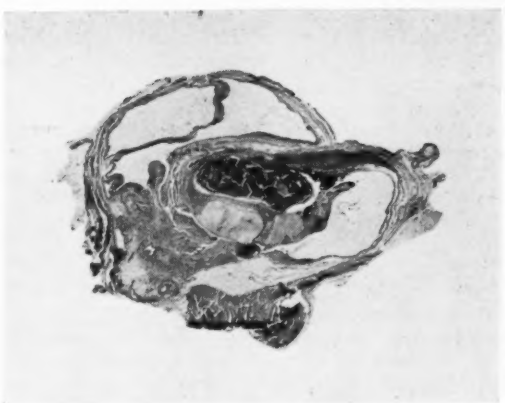

FIG. 4.—L.S. of eye. H. & E. × 4.

TABLE II
(GROUP II—CROSSED GILTS)

No.	Sire	Dam breed	Served by	Farrowed	Total no. in litters	Still-births	Survivors to Weaning	Remarks
B*61	Landrace L	Welsh	A young Large White Boar B	Aug. 22nd	10	0	6	Four died in first two to three days of life. All of litter blind with microphthalmia. Weaned Nov. 1st. Served again Nov. 5th by Boar B. 300,000 I.U. Vitamin A given 11.12.55.
B 64	Landrace N	Landrace L × Welsh	,,	Aug. 27th	6	6	0	All piglets born blind with microphthalmia, one taken for investigation. Remainder died in first two to three days of life. (Served again Sept. 15th by L.W. Boar B.)
B 72	Landrace N	Landrace L × Welsh 222	,,	Sept. 30th	8	0	7	Dosed with Vitamin A (100,000 I.U.) on Sept. 5th (83 days pregnant). All the litter had normal eyes.
B 73	Landrace N	Landrace L × Welsh 222	,,	Aug. 24th	10	0	8	All blind, microphthalmic. Two died after birth.
B 77	Landrace N	Wessex × Welsh	,,	Sept. 2nd	3	3	0	All litter died in first two to three days, but all showed microphthalmia. Served again Sept. 13th by L. W. Boar B.
B 79	Landrace N	Wessex × Welsh	,,	Aug. 28th	5	0	4	All piglets blind and with microphthalmia. Sow developed pneumonia.
B 82	Landrace N	Wessex × Welsh	,,	Aug. 27th	7	0	4	All piglets blind and with microphthalmia. Three died shortly after birth.
B 152	Large White N	Landrace L × Welsh	,,	Aug. 28th	11	0	8	All piglets blind and with microphthalmia. Two died in three to four days and one weakly one taken for investigation.
B*63	Large White N	Unknown	,,	Aug. 26th	10	0	3	All litter blind and with microphthalmia. Six died three to four days. One taken for investigation. Weaned Nov. 2nd. Served Nov. 6th (Boar B) 300,000 I.U. Vitamin A given 11.12.55.

* Control animals (*i.e.* not receiving vitamin A in diet).
There is no relationship between the Landrace Blood in Group I and Group II.

Group III

Only two other in-pig gilts were on the farm at the time of the outbreak. These were Landrace × L.W. in-pig to a L.W. boar unrelated to that used on the Group II gilts. After service these gilts were put on to a good grazing together with in-pig sows until a week before farrowing when they were brought into pens. These animals farrowed uneventfully and the litters were normal in all respects.

Feeding

The ration for all female breeding stock was a meal milled and mixed on the farm, the composition of which was as follows:—

Canadian barley	50 per cent.
Wheat	20 ,, ,,
Parings	20 ,, ,,
Fish Meal	10 ,, ,,

On August 18th the Canadian barley became exhausted and was replaced by home-grown barley.

General

No disease had affected the breeding herd at any time during the spring and summer of that year, although swine erysipelas had been present in the fattening houses.

The animals had not been vaccinated against swine fever.

Examination

Clinical

Clinical examination of all animals was carried out on August 31st and September 12th, 1955. The gilts in general showed no abnormalities although the superficial skin abrasions due to scratching did, in one or two animals show signs of indolence, infection, and reluctance to heal.

The piglets which survived the first two or three days of life thrived. All were blind and had a microphthalmia varying from what appeared to be a small eye of normal structure but with opacity of the cornea, to totally disorientated contracted tissue masses lying deep within orbits of small diameter. In some the lids were closed and slightly gummed together. In others the globus was retracted away from the open lids giving the appearance of mild ectropion.

Several piglets were unable fully to extend their carpal joints and moved about " over at the knee " or on tip-toe. In most of these the condition appeared due to disproportion between the length of the metacarpals and that of the flexor tendons. Several piglets showed inco-ordination of their hind limbs and walked with a swaying, staggering gait. The under surface of the tail, and the anal and perineal regions of some bore wet haemorrhagic eczematous lesions, and sometimes hyperkeratotic lesions were present on the face. An occasional gilt appeared to have an abnormally large clitoris and a reduced vulva.

Pathological

Two of the more weakly piglets, one from the litter of sow B64 and one from B152 were sacrificed, and a *post-mortem* examination carried out. No further anatomical abnormalities were observed within the thorax and abdomen and no macroscopic deviations from the normal were noticed in the joints, bones, and tendons. Routine cultures of all tissues proved negative.

The eyes were carefully dissected out and the depth and reduction in diameter of the bony orbit then became apparent. The optic nerves were dissected out, the brain and spinal cord removed, and together with the eyes were fixed in 10 per cent. formol saline. After six hours' fixation the eyes were incised carefully and transferred to formol corrosive to complete fixation. Representative blocks of all these tissues were taken and embedded in paraffin.

Microscopic examination of the eyes emphasised the severity of the defects. There were considerable variations between the eyes of the individuals and even between the eyes of the same individual.

In the piglet of litter B152 there was complete absence of normal structure in one eye. For the most part it consisted of a mass of connective tissue in which were embedded haphazardly arranged plain muscle fibres and plaques and vesicles of melanin-containing cuboidal choroid cells (Fig. 3).

The other eye was somewhat better differentiated (Fig. 4). The sclera of the posterior half of the globus was weakly formed and lined with a poorly differentiated papillated choroidal layer within which was a connective tissue mass which contained islands of sensitive retina—the rods and cones being frequently arranged round a central lumen. In the centre of the connective tissue mass was an irregularly shaped space containing reticular fragments of vitreous humour and hyaloid vestigia. Anterior to this was more loose connective tisue in which was embedded cartilaginous material containing the lens primordium. The development of the lids was normal.

The skin of the face showed focal areas of hyperkeratosis. There were papilliform proliferations of the stratum cornium in which were embedded foci of cells resembling those of the stratum granulosum.

In the brain and spinal cord no pathological changes were recognised. Longitudinal sections of the epiphyseal plate of the extremities of several long bones showed little abnormality, although the cartilaginous plates were perhaps slightly wider proportionately than those of normal piglets.

Histological examination of the piglet of litter B64 revealed similar changes varying only in degree.

Treatment

In view of the previous evidence suggesting avitaminosis A, as the causal factor of the condition, cod-liver oil and grass meal were added to the ration of all except two of the dams (B61 and B63) which were kept on the original unfortified ration as controls. All were again mated to the same boars as before. Localised skin lesions in the treated group and their litters showed rapid improvement. No obvious lesions for comparison were present in the two untreated animals.

It is known that the eye primordium develops in the first 30 days of gestation in the pig (Hale, 1935), and if abnormalities develop due to lack of vitamin A during this period, these cannot subsequently be corrected. To try to obviate abortion or resorption of the foetuses, 300,000 units of vitamin A were administered parenterally to the controls, 33 days after service.

Results

All the animals on the reinforced diet conceived and farrowed normally. The two controls, however, returned to service at 57 and 120 days respectively when both were settled satisfactorily. It is possible that this failure to complete a normal pregnancy in those two untreated animals was due to a deficiency of vitamin A.

Discussion

As shown, the breeding of the animals concerned was very variable, and this, together with the fact that all in the affected litters showed microphthalmia, seems to rule out a hereditary cause. Certain virus diseases during pregnancy are known to affect the developing foetus, *e.g.* German measles in the human,

the resulting deformity depending on the stage of gestation at which the disease was present in the mother. It is probable that pigs may be likewise affected; the fact that no clinical disease was present during pregnancy makes this unlikely in the present instance.

As the original ration was probably deficient in vitamin A it is reasonable to suppose that its effects would be more likely to be produced in young growing pregnant animals, and this was, in fact, the case with the exception of one mature animal, No. L9. All other sows on the farm during the three months, August to November, together with two cross-bred gilts which were on green pasture from service to a week before farrowing, farrowed normally.

That one gilt, B72, should farrow a normal litter whilst her litter sister, B73, and other gilts under similar management conditions farrowed microphthalmic piglets is difficult to explain other than by supposing that her reserves or utilisation of vitamin A were different.

The supposition that vitamin A deficiency was responsible for the condition is further supported by the other clinical findings, *e.g.* focal hyperkeratinisation of the face, epiphyseal enlargement, and caudal and perineal eczema, and by the results obtained with the control animals. The meal was not assayed to determine its vitamin A content as the samples available were not those which had been fed prior to the outbreak.

Conclusions

It seems probable that vitamin A deficiency was responsible, and that this had arisen because not only was the ration deficient in vitamin A but the animals were unable to supplement it due to the bareness of the pastures in the exceptionally dry summer. The outbreak thus emphasises the dangers inherent in home-mixed unbalanced rations.

Summary

During the period August 12th to November 13th, 1955, which was marked by severe drought, and under conditions where access to herbage was restricted, 11 gilts and one sow farrowed 84 blind piglets with microphthalmia. Of these only 42 were reared.

The only other gilt to farrow during this period, and several other sows all of which had access to green pasture, produced normal litters.

Strong circumstantial evidence is presented to suggest that vitamin A deficiency was the cause of the trouble.

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A Suspected Case of Fluorine Poisoning in a Heifer

BY

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Subject. A black-and-white pedigree British Friesian Heifer, 14 days off calving, aged two years two months.

History. This heifer had been jumping on a cow in service, and had, according to the farmer, " put her shoulder out " by coming down on the very hard ground.

Diagnosis. Examination showed that there was no shoulder injury and the trouble was located in the outside half of the off forefoot. Symptoms of intense pain were manifested, and a careful search for infection proved negative. A fracture was suspected, and an X-ray examination confirmed the diagnosis.

Treatment. The digit was removed, the operation being carried out approximately three days after my first visit. The heifer was a bad subject for chloroform and nearly died under the anaesthetic.

Preliminary Results. Two days after the operation the heifer aborted a dead calf. She retained the afterbirth and developed a severe metritis. A three-day course of antibiotics, and the removal of the afterbirth apparently controlled the systemic disorder; but this time, the heifer, whilst standing on the operated foot, now showed evidence of hyperacute pain on the outside claw of the near forefoot.

Subsequent Course and Treatment. A fresh X-ray examination revealed a fracture apparently identical to the first one. On the following day this second fractured claw was surgically removed. Despite difficulties of anaesthesia, the operation was again successful, and within three days the heifer was walking remarkably well on the two bandaged feet. She is now virtually back to normal, and is giving 37 lb. of milk per day.

It was originally my intention to publish the X-ray and other photographs, but having stumbled on the solution of the case I do not think it necessary to do so. Casting around for a reason for the excessive brittleness of the bones, fluorine poisoning as a possible cause was suggested by Mr. N. H. Brooksbank, V.I.O., of Liverpool. Examination of the heifer's mouth showed the typical fluorine lesions, and further questioning of the owner revealed that he had only recently brought the heifer from a fluorine-affected area.

Remarks. Dissection of the fractured bones showed that each was a virtually identical transverse fracture of the *Os pedis*.

Acknowledgments.—My grateful thanks are due to my colleague Mr. D. P. McIntee for his general help and for his really first-class anaesthesia on a most difficult subject. Also to Mr. N. H. Brooksbank—who has so often helped to solve my practical problems.

Comparison of the Immunity Produced in Guinea-pigs by the Inoculation of Killed "Rough" and "Smooth" Cultures of *Brucella melitensis* in Adjuvants

BY

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EXPERIMENTS in goats, cattle, and guinea-pigs (Gilbert, 1943; Stableforth, 1947; Report, 1949) showed that a formalin-killed smooth culture of *Brucella abortus* in a lanolin-liquid paraffin adjuvant provided a considerable degree of protection against challenge with virulent *Br. abortus*. In a later experiment in cattle, McDiarmid (1949) using a larger challenge dose demonstrated less protection with a similar killed adjuvant vaccine than with Strain 19. Gwatkin & Dzenis (1952) and Live (1949) found that killed cultures when combined with adjuvants were effective vaccines in guinea-pig experiments. Renoux, Alton & Amarasinghe (1955) demonstrated protection against *Br. melitensis* infection in goats by the use of smooth killed *Br. melitensis* in adjuvants. Smooth cultures in adjuvants produce, however, a marked and prolonged agglutination response which is undesirable. The work of McEwen & Samuel (1955) suggested that perhaps a comparable degree of immunity could be obtained, without agglutinins being produced, by the use of a heat-killed rough strain in adjuvants.

In the experiments to be described, a comparison was made in guinea-pigs of the protective power of adjuvant vaccines prepared from two rough cultures and one smooth culture of *Br. melitensis*. The serological response to these vaccines was studied in guinea-pigs and rabbits.

Materials and Methods

Media

Glycerine-dextrose agar, described by Henry (1933), was employed for the differentiation of colony types by microscopic examination and for viable counts. Potato agar, routinely used in this laboratory for the production of antigen and vaccine, was employed for the growth of the vaccines in this experiment. More recent work has shown that the rough cultures grow more luxuriantly on Albimi agar. This medium, however, cannot be used for the production of smooth vaccines as it favours the growth of non-smooth mutants.

Albimi agar containing antibiotics was used for the recovery of Brucella from animal tissues. The concentrations of antibiotics were those suggested by Kuzdas & Morse (1953) with the exception of circulin which is no longer available. Ethyl violet was used in place of crystal violet (Renoux, 1954). Viable counts of *Br. melitensis* were identical on Albimi antibiotic medium and on glycerine-dextrose medium.

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Preparation of the Vaccines

Two rough cultures, hereafter designated R6 and R7, were obtained by picking single colonies from plates seeded with a broth culture which had been inoculated 18 days previously with a virulent smooth strain of *Br. melitensis* (H38). The colonies of R6 were white and extremely granular, whereas those of R7 were grey-blue and somewhat shiny. When touched with a needle, the colonies of R6 were easily fragmented; those of R7 were viscous. Both cell suspensions were agglutinated by acriflavine and were unstable in normal saline. For the production of vaccine, 72-hour growth of these rough cultures on potato agar was harvested with buffered saline, a viable count was performed on glycerine-dextrose plates, and the suspension was killed by heat (two hours at 60° C.). When the suspensions were proved to be non-viable they were concentrated by centrifugation to contain approximately 5 times 10^{10} organisms per ml.

A 72-hour culture of a virulent, smooth strain of *Br. melitensis* (16M) was harvested, killed, and standardised in the same way as were the rough cultures.

The adjuvant, consisting of four parts of light liquid paraffin mixed with one part of Falba, was sterilised in an autoclave. One part of the suspension of killed organisms was emulsified in four parts of the adjuvant. The resulting emulsions were stable.

Experiment I

Three groups of male guinea-pigs weighing from 400 to 600 grammes were inoculated subcutaneously over the right thoracic region with 0.2 ml. of the appropriate vaccine. Challenge of vaccinated guinea-pigs and a group of controls was carried out eight weeks after vaccination, using a virulent smooth strain of *Br. melitensis* (H38G) recently isolated from an experimentally-infected goat. A 48-hour culture was harvested in buffered saline, standardised in an electric nephelometer, and diluted appropriately. Viable counts were made on glycerine-dextrose agar immediately before and immediately after inoculation of the guinea-pigs. Each guinea-pig received 1 ml. of the appropriate dilution intramuscularly in the right hind leg. Autopsies were commenced four weeks after challenge and were completed in four consecutive days.

Precrural, axillary, cervical, submaxillary, and iliac lymph nodes and spleen were minced and streaked on Albimi agar containing antibiotics. One colony from each infected guinea-pig was typed.

The recovery of a single colony of *Br. melitensis* from a guinea-pig was considered to be evidence of infection of the animal. The calculated percentage of guinea-pigs infected with each challenge dose, as derived from cumulative totals, was plotted on log probability paper and the ID_{50} determinations carried out according to the method of Bonet-Maurey, Jude & Servant (1954). The chi² test is as described by Litchfield & Wilcoxon (1949) except that the " per cent. calculated " is obtained from the cumulative totals.

Experiment II

Three additional groups of male guinea-pigs were inoculated with freshly prepared batches of the three vaccines described above. Five animals from each vaccine group were bled from the heart at 20, 29, 41, and 52 days after vaccination, each guinea-pig being bled only once before challenge. Vaccinated guinea-pigs and a group of controls were infected eight weeks later with challenge strain H38G. An attempt was made to give each group the number of organisms corresponding to the ID_{50} as determined in the first experiment. The actual numbers of organisms injected, determined by viable counts, are recorded in the results (Table II). Autopsy procedures were the same as those of Experiment 1.

Serological Studies

All guinea-pigs were bled at autopsy and their sera tested for agglutinins against smooth antigen. Sera obtained from guinea-pigs in Experiment II were tested against both rough and smooth antigens in the agglutination and the complement-fixation tests.

Two rabbits were injected subcutaneously with each of the adjuvant vaccines and bled at frequent intervals following inoculation. Serum was tested in the agglutination and complement-fixation tests against both rough and smooth antigens.

Antigens for the agglutination test were prepared from heat-killed cells of R6, R7, and smooth *Br. melitensis* cultures suspended in M/15 phosphate buffered saline (*p*H 7.4) and standardised to Brown's Tube No. 4. A trichloracetic acid extract of smooth cells (Boivin-type antigen) and a whole cell antigen (1/50 dilution of the R6 agglutination antigen) were used in the complement-fixation test.

Results

The percentage of guinea-pigs found infected in the first experiment is shown in Table I and in the graph. Having only one point between 0 and 100 per cent. infection for the R7 vaccine the line was arbitrarily drawn parallel to that of the controls. All three vaccines appeared to have the same protective power. The ID_{50} of the vaccinated animals was approximately 40 times that of the controls.

Table II contains the results obtained in Experiment II. The results which were expected on the basis of the graph drawn from the first experiment are given in the final column of this table. R6 and S vaccines gave similar protection to that obtained previously, but R7 vaccine was considerably less effective in the second trial.

TABLE II

Vaccine	Challenge dose, number of organisms	Number infected/ number inoculated	Per cent. infected	Per cent. infected; estimated from Experiment I
R6	500	4/11	36·4	44
R7	500	11/12	91·7	36
S	500	5/15	33·3	40
Controls	13	4/10	40·0	40

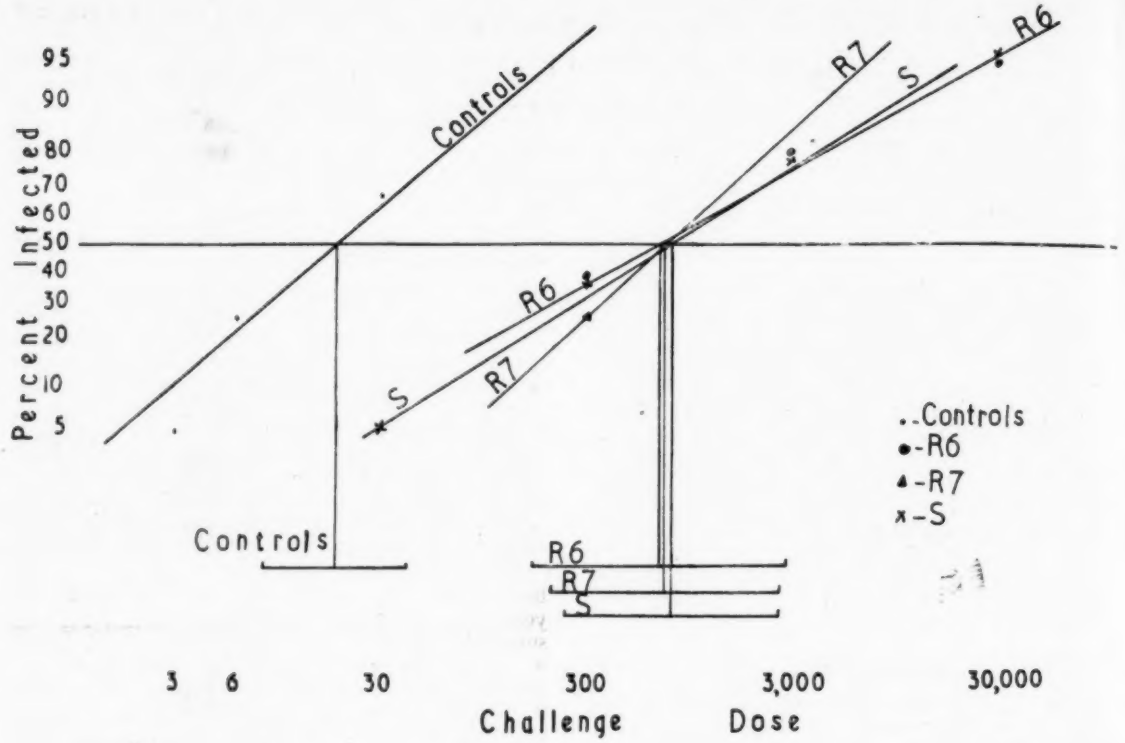
Serological Results

In the first experiment 18 guinea-pigs in the R6 vaccine group and 15 in the R7 group were negative

TABLE I

Vaccine	Challenge dose, number of organisms	Number infected	Per cent. infected		ID_{50}	Confidence limits	Chi² of the line *
		Number inoculated	Per cent. observed	Per cent. calculated			
R6	30	0/11	0	0			
	300	4/8	50	36·4			
	3,000	7/9	77·7	78·6	700	164–3,000	1·575
	30,000	7/8	87·5	94·7			
R7	30	0/9	0	0			
	300	2/8	25	25			
	3,000	8/8	100	100	750	203–2,775	0
	30,000	8/8	100	100			
S	30	1/10	10	5			
	300	4/10	40	33·3			
	3,000	8/11	72·7	76·5	800	238–2,700	1·5
	30,000	10/11	90·9	95·8			
Controls	3	1/9	11·1	4·8			
	6	3/10	30	25			
	30	6/10	60	66·6	18	8–41	1·8
	300	8/9	88·8	94·7			

* In each of the groups the number of degrees of freedom is 2, and to indicate a good fit the chi² of the line must be less than 5·9.



on culture at autopsy. All 33 were negative to the agglutination test, whereas 19 non-infected animals vaccinated with the smooth vaccine had agglutination titres ranging from nil to 1/80.

Sera obtained before challenge from guinea-pigs in Experiment II which had been vaccinated with R6 and R7 did not contain antibodies reacting with the smooth antigens in either the agglutination or the complement-fixation test. Rabbits inoculated with R6 and R7 vaccines did not produce antibodies to smooth antigens, although those inoculated with S vaccine had high-titre antibodies to smooth antigen within four days.

The rough vaccines did not stimulate production of detectable antibodies to smooth cells and the antibody response to rough cells was irregular, of low titre, and low avidity. Only partial agglutination of the rough antigens was obtained with such sera. In the complement-fixation test the rough antigen-antibody combination fixed less complement than the smooth system.

Discussion

Approximately the same degree of protection in guinea-pigs was obtained with a heat-killed rough adjuvant vaccine, as with a similar vaccine made from a virulent smooth strain of *Br. melitensis*. This experiment demonstrates that the results obtained by McEwen & Samuel (1955) working with *Br. abortus* may also be reproduced with *Br. melitensis*. Neither agglutinins nor complement-fixing antibodies against smooth *Br. melitensis* were produced by the rough vaccines.

The immunising power of the R7 vaccine was not as clearly demonstrated as that of R6. In Experiment I the R7 vaccine gave good protection against the two lower challenge doses and no protection against the two higher doses. This is not the type of response usually obtained in brucellosis of guinea-pigs. Experiment II suggests that R7 is of less value as an immunogenic agent than R6.

It is possible that a rough vaccine produces immunity through a group antigen and may give a wider range of protection than smooth vaccines. This may prove of the greatest importance in Caprine Brucellosis as two different antigenic types of *Br. melitensis* are frequently involved.

Summary

An adjuvant vaccine prepared from a rough culture of *Br. melitensis* produced the same degree of immunity in guinea-pigs as a similar vaccine prepared from a typical smooth strain. Agglutinins to smooth antigen were not produced by the rough vaccine.

Acknowledgments.—It is a pleasure to express our sincere thanks to Dr. A. W. Stableforth for his encouragement, suggestions, and active support, and to Mr. P. D. Thomson for much valuable help.

(*Concluded at foot of col. 1 opposite*)

Character in Cows

Woman Doctor Learns to Know a Pedigree Herd

Re-published by courtesy of the Editor of The Times

WHEN I was snatched from a busy life in London, and planted down on an isolated farm, it was obvious that I must adapt myself; spring, summer, and autumn seemed possible, but what about the winter?

I was shown everything, and, in due course, arrived at the cowhouse to admire the nucleus of a pedigree herd. My ignorance of cows was abysmal, even fantastic, but I was solemnly conducted by the herdsman of that day down the standings, and shown, first, the business end. Then we turned, and came back to see the cows feeding from their individual troughs. Suddenly I had the sense of something familiar, a look in the eye, an impression of malaise which I recognised, and, without thinking, I said, " That cow is going to calve almost at once."

Not Much Difference?

All I got was a pitying smile, and the information that she was not due for a fortnight, and would probably be late at that. Covered with shame, I finished the round, and retired. Next morning I was told that the cow in question had been delivered of a fine heifer calf in the early evening. I thought, rather smugly, " There can't be much difference after all between the ladies of my former London practice and those of our herd."

Nothing further happened until, one day, I made the same remark, received the same reply—and the cow kindly obliged, to the stupefaction of all concerned, myself included. By this time the herdsman regarded me with deep suspicion, and my husband, highly amused and with the idea, I think, that it would be better for me to have some definite occupation and responsibility, suggested that I take over the herd as my part in the venture. Buoyed up by a conceit the very thought of which now makes me shudder, I agreed, and then through the last 25 years, proceeded to learn something about the job. By trial and error—mostly error—backed by the great help given me by those who were experts, I acquired some slight knowledge.

False Assumption

I started with the assumption that all cows were alike. I quickly learnt how wrong I was, for every single one of them is different. To begin with, there is always a " master cow," a misnomer, but I refuse to use the word " mistress." This cow always goes out first, the others standing back respectfully to let her pass, and she always leads the way in. It is not the oldest cow, or the biggest, so one is forced to believe it must be something inherent in her character which makes her the acknowledged leader.

Whether the others like it or not I have never been able to determine, but one summer's day last year, when they were feeding on lucerne and, presumably, would go on doing so until they were fetched in, I began to wonder. Quite by chance, the herdsman noticed a great deal of milling about, and thought that a cow was down. He rushed to the field, to discover the " master," her horns caught in wire, rendered helpless, whereupon the others had set upon her savagely, and it is a fact that, had he not arrived at that moment, they would have killed her. Even so she was terribly horned, and had to be withdrawn from a forthcoming local show where we had had good hopes she would do well.

She recovered, but it was a near thing. I know that a cow in difficulties is liable to be attacked by the others. But I wonder if, in this particular case, there may not have been some definite animus against the stronger character, who ordinarily lorded it over the rest, and so, when she was helpless, they took advantage of the opportunity to get their own back. Incidentally, we always found that particular cow a most sullen and unattractive animal.

I have always been surprised that so many women still have a fear of cows. I have made it a strict rule that no stick should ever be used in driving them, and have found them the most amenable of beasts. Admittedly, a cow in a loose-box after calving is a bit tricky, but that is simply the ingrained instinct to protect her calf.

The backbone of the herd, mercifully, is made up of the dear old ladies who go on doing their job, and whom nothing appears to upset, but, unfortunately, these are only a very small proportion of the whole. There are others for whom one has an instinctive mistrust. Nothing wrong with either conformity or performance, but one just feels that they are going to be difficult, and sure enough, the slightest thing puts them off—change of grazing, change of concentrates or other food, the presence even of a

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Comparison of the Immunity Produced in Guinea-pigs, etc.—*Concluded.*

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stranger while milking is going on—all is reflected in their yield. They react each time, and it is a continual struggle to make them do their stuff.

Only One Kicker

Some cows milk easily, some take twice the time. Some have the greatest objection to the machine, while others never mind at all. All this is tiresome, but there is no ill-feeling behind it. I have only once had to get rid of a good cow because she was really vicious, kicking at anyone who came near her. As everyone knows, a cow does not kick back but sideways and up. So it is perfectly safe to stand behind, naturally looking out the while for other contretemps which may occur.

We once had a vet. who invariably appeared in an immaculate white coat. I always wondered what his laundry bills must be. That coat was the cause of continual trouble, and every time he had to take it off. To my relief, his successor most sensibly envelops himself in a vast rubber apron, of no particular colour, which so far has produced no particular reaction.

There is also the strict distinction, between the Old Girls and the New Girls. If one waited until a heifer calved before running her with the herd, her chances would be poor. As it is, by turning them out some while before, they are often slightly horned, and always feed alone, or in company with others in like case, well removed from the rest, and when brought in, remember their place, following meekly in the rear.

The accepted phrases, " She is as placid as a cow," " What a cow-like female," or " How bovine she is " are all so completely wrong. To find a collection of assorted, individual, difficult, and temperamental ladies, lead me to a milking herd of pedigree cows.

LEGAL NOTE

At Gloucester Assizes last week, Mr. Thomas Christopher Ryan of 5, Swallow Crescent, Innsworth, Gloucester, claimed damages from Mr. Ronald Mills of " Southgate," Brooklyn Road, Cheltenham, a greyhound trainer, on the grounds that a greyhound had bitten him while having a wound stitched by Mr. Mills.

Mr. James Campbell, prosecuting, said in August, 1954, the greyhound was injured in a fight with another, and the wound required stitching. Mr. Ryan, who was then employed as a kennel man by Mr. Mills, held the dog's front paws, and a strap round its neck, while Mrs. Mills held its hind legs. No anaesthetic was administered and on feeling the prick of the needle the dog gave a leap, freed its paws, forced its muzzle off, and seized Mr. Ryan's left wrist.

In his judgment Mr. Justice Finnemore said the proper way for a wound to be stitched was by a veterinary surgeon using an anaesthetic. He did not think the muzzle had been properly secured. He awarded Mr. Ryan £800 general damages and £96 special damages with costs.

In Brief

MORTALITY AND MORBIDITY IN CALVES

THE results of the most recent survey (Withers, 1952) are in general agreement with previous studies of this problem (Jordan, 1933 ; Lovell & Hughes, 1935 ; Lovell & Bradford-Hill, 1940). Withers found that in dairy herds the over-all mortality rate in heifer calves was 8·3 per cent. and 48 per cent. of the deaths in calves under six months old occurred in the first week of life. The highest mortality rate was recorded between February and April. This effect of climate was also demonstrated by the higher mortality rate in Scotland (11·9 per cent.) than that of England and Wales (6·8 per cent.). The losses in the early months of the year were partly attributable to the low vitamin A content of the colostrum of cows calving in the spring. The role of colostrum in preventing calf losses, particularly those associated with scour is well known. Withers was able to show that the method of feeding the colostrum was also important and he found a considerably higher mortality among calves in herds where colostrum was pail-fed than among calves receiving it naturally from their dams. He found a general recognition of the importance of introducing dry food into the diet as early as possible. The dangers of an exclusively milk diet will be of greatest importance in beef herds where the practice of prolonged suckling on the dam is more common. In some beef herds in Scotland Blaxter (1953) has demonstrated the association between muscular dystrophy and vitamin E deficiency in calves reared on dams wintered on a diet restricted to turnips or swedes and straw, and more recently Blaxter & Sharman (1955) have reported hypomagnesaemic tetany in calves associated with the liberal feeding of whole milk.

The general relationship of housing to health in calves is well recognised, but as Withers found it is often difficult to separate this factor from the others which operate. For example, on farms where only a small number of calves are reared and housing standards are very low, the individual attention made possible by the small numbers may compensate for the adverse effect of bad housing conditions. An exact statement of the significance of the various aspects of housing must await the results of the fundamental investigations on the requirements of calves in this respect.

C. S. GRUNSELL (May, 1955).

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In Parliament

Foot-and-Mouth Disease

MR. HURD (October 29th) asked the Minister of Agriculture, Fisheries and Food how many original outbreaks of foot-and-mouth disease have occurred in the past six months; the number of animals involved and compensation payable; in how many cases the infection appears to be attributable to frozen or chilled meat; and what stricter measures are being taken to prevent infected carcases being shipped here from South America.

MR. AMORY: Fifteen primary outbreaks have been confirmed, involving the slaughter of 1,610 cattle, 2,302 sheep, 1,054 pigs, and two goats with compensation amounting to £121,000. Total outbreaks, including both primary and secondary, amounted to 120, involving the slaughter of 7,775 cattle, 11,589 sheep, 3,336 pigs, and 37 goats in all. Total compensation amounts to £610,000. Infection is attributed directly or indirectly to frozen or chilled meat in 12 of these cases. Two of my veterinary officers permanently stationed in South America co-operate closely with the authorities there to reduce so far as possible the risk of carcases infected with foot-and-mouth disease being shipped to this country. These arrangements are constantly under review.

CAPTAIN KERBY asked the Minister of Agriculture, Fisheries and Food what evidence he has to suggest that foot-and-mouth disease is being brought into Great Britain in the marrow bone of imported carcase meat from the Argentine; and what steps he proposes taking to control the sale of such infected bone.

MR. AMORY: In many of the primary outbreaks of foot-and-mouth disease in this country there is evidence that live-stock have been in contact with raw meat or bones from South American carcases. It is known that the virus can survive for several months in chilled and frozen meat and in bone-marrow at cold-storage temperatures. My veterinary officers stationed in South America co-operate closely with the authorities there to reduce so far as possible the risk of infected carcases being sent to this country. Strict compliance with the requirements of the Boiling of Animal Foodstuffs Order would do much to prevent outbreaks of disease. I am considering further measures for the control of swill for feeding to animals.

Slaughterhouses in Scotland

The following statement was made by the Secretary of State for Scotland in the House of Commons on October 25th.

Having regard to the views which have been expressed by local authorities, it is not proposed to adopt the recommendations of the Scottish Interdepartmental Committee on Slaughterhouses so far as they relate to the setting up of new slaughterhouse authorities and the concentration of slaughtering in a relatively small number of control slaughterhouses located according to a national siting plan.

The general structure of the provisions relating to Scotland in the Slaughterhouses Act, 1954, will be retained. This means, in particular, that responsibility for the slaughterhouse service will continue in the hands of individual authorities who have a duty under the Act to satisfy themselves about the adequacy of the service in their districts, with power to provide public slaughterhouses where necessary and to register private slaughterhouses, in both cases subject to the Secretary of State's consent.

Experience shows that there is no widespread demand in Scotland for the re-opening of the larger number of slaughterhouses which were closed for the purpose of meat control. No appreciable increase in the number of slaughterhouses now operating is therefore expected, although circumstances may emerge in particular districts justifying the building of modern and well-equipped establishments either by the local authority or by private interests.

The most urgent need is to improve the conditions under which the slaughtering of animals takes place. For this purpose, it is proposed that standards of construction, equipment, and maintenance should be prescribed to promote the hygienic handling of meat, proper meat inspection, satisfactory working conditions, and the humane treatment of animals in both existing and new slaughterhouses.

A period of grace would be allowed for compliance with these standards so far as this depended upon the carrying out of structural alterations at existing slaughterhouses, but the period would be extended in exceptional circumstances where the Secretary of State considered that this was justified.

Subject to this, it would be in the public interest that the Secretary of State should have power to direct the closure of any slaughterhouses, public or private, for non-compliance with the proposed standards, where necessary after a public local inquiry had been held into the circumstances of the case.

The Government will, as soon as practicable, propose legislation to secure these aims and the opportunity will be taken to amend the provisions relating to Scotland in the Slaughterhouses Act, 1954, in one or two respects which experience has shown to be desirable.

Slaughterhouses

MR. DYE (November 5th) asked the Minister of Agriculture, Fisheries and Food how many proposals to provide new slaughterhouses or to bring existing ones up to modern standards have been received by him; what is their estimated cost; how many have received his approval, and how many await his decision.

MR. AMORY: Since June, 1954, 201 such proposals for private slaughterhouses have been received, of which 156 estimated to cost about £300,000 have been approved. Twenty-one are under consideration. In the same period, improvements costing £330,000 have been carried out at 42 slaughterhouses provided by local authorities, and one new public slaughterhouse costing £16,500 has been built. Many local authorities are known to have proposals for building new public slaughterhouses or for major reconstruction of existing

premises. Owing to the restrictions on capital expenditure, I am at present unable to approve any local authority schemes except where the work is essential in the interests of public health and safety.

MR. DYE: The right hon. Gentleman says he is unable to approve many schemes submitted by local authorities and by private enterprise. Is this not happening at the same time that very great improvements are being made to facilities for beef imported into this country; and is the home producer not, therefore, at a disadvantage in the quality of his produce reaching the consumer?

MR. AMORY: I am entirely with the hon. Member, I think, in wanting to see many new slaughterhouses built and existing ones improved. If the hon. Gentleman will study my answers, he will see that we do approve the very big majority of applications for private slaughterhouses, and the temporary restriction at present is on local authority slaughterhouses owing to the paramount need to restrict Government and local government expenditure temporarily.

Milk

MR. HURD (November 5th) asked the Minister of Agriculture, Fisheries and Food how milk production for the past three months compares with production in the same period of 1955 and the average for the five years 1951 to 1955; and to what extent the consumption of liquid milk in the past five years has increased.

MR. AMORY: In July, August, and September, 1955, sales off farms in England and Wales totalled 390.5 million gallons; the figure for the corresponding period this year was 426.8 million gallons. The average for the five years 1951 to 1955 was 374.8 million gallons. The quantity of milk sold for liquid consumption in the last 12 months was about 2.4 per cent. less than it was five years ago.

Rabbits

MR. VANE (November 5th) asked the Minister of Agriculture, Fisheries and Food which counties are clear of rabbits; and what reports he has had of local increases.

MR. AMORY: I cannot say that any county is completely clear of rabbits. Recent reports indicate increases in some areas, mostly in the Midlands and south-east. Though so far the increases fortunately do not seem to be very marked, the threat is a serious one and calls for the most energetic action on the part of all concerned.

MR. VANE: Is it not a little disappointing that we cannot yet record one single county as being entirely clear? Will my right hon. Friend see that the clearing up of these pockets of rabbits is not overlooked, particularly now that the land is clear of crops and that after the frost the undergrowth will have died down and it can be seen exactly how extensive is the spread of rabbits?

MR. AMORY: The point I want to emphasise to my hon. Friend is that I cannot say for sure that any county is completely clear. In some counties it is nothing more than a rumour that a rabbit has been seen somewhere during the month. As regards the second part of my hon. Friend's supplementary question, I agree with him that this period of the year when the foliage has died down will give us a great opportunity of dealing with any survivors.

Eggs

SIR J. BARLOW (November 5th) asked the Minister of Agriculture, Fisheries and Food what has been the total production of hen eggs so far this year, compared with the comparative period last year; and how the present retail price compares with that current at the same date last year.

MR. AMORY: The total quantity of hen eggs sold to packing stations from April to September, 1956, inclusive, was 270 million dozen or about 8 per cent. greater than in the corresponding period last year. During October it is provisionally estimated that throughput of packing stations was about 23 per cent. higher than in October, 1955. Retail prices of home-produced large eggs are at present about 6d. per dozen lower than a year ago, but prices of other grades are about 1s. 0d. a dozen lower.

Fowl Pest (West Riding)

MR. DRAYSON (November 5th) asked the Minister of Agriculture, Fisheries and Food what consideration he has given to the question of designating the West Riding of Yorkshire as a white area in view of the absence during recent months of any outbreaks of fowl pest in the area.

MR. AMORY: I am at present conducting a review of the " clean area " policy which I intend to discuss shortly with representatives of the poultry industry. Pending this review, I have decided not to add to the present clean area.

National Stud Foal (Death)

MR. CROUCH (November 5th) asked the Minister of Agriculture, Fisheries and Food what further investigations have been made to find the cause of death of the foal from the National Stud which died at the Doncaster sales.

MR. AMORY: As an examination of internal organs at the Ministry's Veterinary Laboratory disclosed no evidence of infectious disease or poisoning, further inquiries would not have served any useful purpose.

MR. CROUCH: Is my right hon. Friend aware that a number of my constituents are concerned about the death of this animal and that it is not the first occasion that animals from this Stud have died at the Doncaster sales? May I again ask whether he is satisfied with the management of the Stud and that there was no trace of arsenic? Do I understand it was anticipated that this animal would have realised the highest price of any animal produced at the National Stud?

MR. AMORY: I share the chagrin of my hon. Friend at the loss of this foal, but I am completely satisfied with the management of the National Stud, and there was no evidence of arsenic or any other poisoning.

News and Comment

THE B.V.A. AUTUMN CONFERENCE

The General Secretary is receiving a great many applications from non-veterinarians for tickets for this Conference. These are being withheld, however, until all B.V.A. members wishing to attend have had full opportunity to send in their application slips (issued with a programme in THE VETERINARY RECORD of October 20th, 1956). This slip asks members to state whether they will be attending on one or both days and whether they require luncheon facilities on one or both days.

Readers are urged *to apply without delay, and not later than November 13th.* After this date, tickets will be issued to other interested persons.

MR. H. M. ANDERSON

As we go to press we learn with great regret of the sudden death of Mr. H. M. Anderson, Assistant Secretary and Assistant Registrar of the Royal College of Veterinary Surgeons. He died peacefully, while sitting in his home, last Tuesday.

His passing comes at a sadly early age, and he had only been in the service of the Royal College for a few years. He was much liked for his quiet, genial manner, and his courtesy, and was equally esteemed for the high quality of his work. We hope to publish an appreciation next week, and in the meantime would wish to express very deep sympathy to his widow and young family.

CHANGE OF ADDRESS

The Wellcome Trustees announce that on November 12th, 1956, the office of their Chairman (Sir Henry Dale, O.M.) and their Scientific Secretary (Dr. F. H. K. Green) will be transferred from 24, Harley Street, London, W.1, to 52, Queen Anne Street, London, W.1. (Telephone Nos.: WELbeck 5721/2.)

MODIFIED TB. ERADICATION SCHEME FOR EIRE

It has been announced that a modified scheme for the eradication of bovine tuberculosis is to be introduced. The main feature is the division of the country into areas to be known as intensive, pre-intensive, and general. In areas under the two first designations compulsory eradication will be begun fairly soon, beginning with Co. Clare and Co. Sligo in 1957.

NATIONAL SMALL-ANIMAL ASSOCIATION

Further to the formation of a "national small-animal association" (provisional title) referred to in a recent letter from Mr. W. B. Singleton (*Vet. Rec.* **68,** 613) it has been arranged, by courtesy of the B.V.A., to hold a meeting at Mansfield Street on November 16th at 5.30 p.m. Mr. S. F. J. Hodgman will take the chair, and it is hoped that members interested in the formation of this organisation will attend.

OIL FUEL RESTRICTIONS

The following is an extract from a letter received as we go to press from the Animal Health Division of the Ministry of Agriculture:—

"The following arrangements have been agreed in respect of interests covered by this Department:—

"Retail distributors of petrol and derv have been asked by the Ministry of Fuel and Power to meet the needs, so far as possible, of their customers up to 90 per cent. of normal requirements, and in case of shortage to give priority, among others, to veterinary surgeons, those engaged in wholesale food collection and distribution, milk collection and distribution generally, and those using agricultural machinery.

"The Minister is confident that he can rely upon your Association to do all that is possible in the national interest to achieve a substantial reduction in the use of oil, and to ameliorate the effects of the emergency by the adoption of such special measures, *e.g.* self-help and mutual aid among the members of the veterinary profession as may prove practicable."

TREATMENT OF EYE INJURY IN A JAGUAR

On arrival at the Zoological Gardens, Belfast, this animal, which was in good bodily condition, was suffering from a traumatic lesion to the eye. The eye-ball was swollen with slight lacrimation and photophobia.

The jaguar was anaesthetised with chloroform, having first been put into a "crush," and on examination of the eye, vascularisation was seen as small radiating lines traversing an opaque cornea.

The eye-ball was cleansed with a sodium bicarbonate solution, and finally well flushed with distilled water. Two oxytetracycline* eye pellets were inserted into the conjunctival sac and the animal placed in a dark pen.

On the following day the keeper reported that the jaguar had fed well, but the eye looked as if it had collapsed. On arrival the curator, Mr. A. McLean, to whom we are indebted for this note, found that the cornea had ruptured and that there had been an escape of aqueous humour.

As this animal was surprisingly easy to handle, it was placed in the "crush" again and an oxytetracycline eye pellet dissolved in distilled water was poured over the eye. This treatment was carried out twice daily for about 14 days. A surprising thing

* Terramycin.

was that the animal was amenable to the treatment and in no way attempted to interfere with the eye.

By now the animal is on exhibition, and to the ordinary visitor there is nothing about the eye to attract attention or sympathy. On close examination there is to be seen a small amount of corneal pigmentation.

ACCESSIONS TO THE R.C.V.S. LIBRARY

The following publications have been received in the library:—

ANIMAL DISEASES RESEARCH ASSOCIATION. Annual Report and accounts, 1955/56.

AUSTRALIA. *Commonwealth Scientific and Industrial Research Organisation*. Seventh Annual Report for the year ending June 30th, 1955.

AUSTRALIA. *Northern Territory Administration*. Animal Industry Branch, 1955/56.

AUSTRALIAN VETERINARY ASSOCIATION. 1955 Annual Conference.

BASUTOLAND. *Department of Agriculture*. Annual Report, 1955.

BLACKBURN. *County Borough*. Annual Report upon the health of Blackburn for the year 1955.

CANADA. *Veterinary Director General*. Report for the year ending March 31st, 1955.

FIJI. *Department of Agriculture*. Annual Report, 1955.

GOLD COAST. *Department of Animal Health*. Annual Report, 1954/55.

GREAT BRITAIN. *Medical Research Council*. Report 1954/55.

GREAT BRITAIN. *Ministry of Health*. Report, Part I, for 1955.

HOLLAND. Jaarverslag K J., 1955.

HONG KONG. Annual Departmental Reports, 1954/55.

JAMAICA. *Department of Agriculture*. Annual Report, 1954; Investigations, 1954.

LEEDS. *Medical Office of Health*. Annual Report, 1955.

MADRAS. *Veterinary College*. Calendar for the Academic Year 1956/57.

MICHIGAN. *State Board of Agriculture*. Ninety-fourth Annual Report *and Agricultural Experiment Station*. Sixty-eighth Annual Report, 1954/55.

MUKTESWAR IZATNAGAR. *Indian Veterinary Research Institute*. Annual Report, 1950/51.

NATIONAL FARMERS UNION. Yearbook, 1956. Part I. Annual Report, Part II. List of Office Holders.

NEWCASTLE UPON TYNE. *Veterinary Department*. Annual Report of the veterinary officer for the year 1955.

NEW ZEALAND. *Department of agriculture*. Annual Report of the director-general of agriculture for the year ended March 31st, 1956.

NEW ZEALAND. *Department of Scientific and Industrial Research*. Thirtieth Annual Report, 1956.

NORTHERN RHODESIA. *Department of Veterinary Services*. Annual Report, 1955.

NOTTINGHAM UNIVERSITY. *School of Agriculture* (First) Report, 1955.

PHILADELPHIA. *Penrose Research Laboratory*. Report, 1955.

READING. *National Institute for Research in Dairying*. Report, 1955.

TRINIDAD AND TOBAGO. *Departmeent of Agriculture*. Regulations concerning the importation of Animals, etc., 1954.

UNITED STATES. *Livestock Sanitary Association*. Proceedings, 59th Annual Meeting, 1955.

UNITED STATES *Department of Agriculture*. Yearbook of Agriculture, 1956. Animal Diseases.

WASHINGTON STATE COLLEGE. Extension Bulletin 506. Irrigated pastures for hogs, 1956.

WASHINGTON STATE COLLEGE. Extension Bulletin 505. Irrigated pastures for sheep, 1956.

WASHINGTON STATE COLLEGE. Extension Bulletin 504. Irrigated pastures for Washington, 1956.

WEST AFRICAN INSTITUTE FOR TRYPANOSOMIASIS RESEARCH. Annual Report, 1955.

ZANZIBAR. *Department of Agriculture*. Annual Report, 1955.

MR. J. R. PRATT

It is with great regret that we record, below, the death of a well-known North Riding veterinary surgeon, Mr. John Rawnsley Pratt, of Ruebury House, Osmotherley, near Northallerton. He died on October 31st at the age of 57. Mr. Pratt qualified in London in 1920, and having first acted as assistant in his father's practice, he later moved to Leyburn. He returned to take over the family practice at Northallerton on his father's retirement.

Mr. Pratt was held in high regard by the agricultural community over a wide area, and he will be greatly missed by clients and friends alike.

PERSONAL

Birth

MONKS.—On October 20th, 1956, to Jean, wife of Richard Monks, M.R.C.V.S., at Bungay, Suffolk, a daughter, Elizabeth.

R.C.V.S. OBITUARY

We record with regret the deaths of the following members of the profession:—

ELPHICK, Harry Stephenson, 36, Woodvale Road, Darlington, Co. Durham, Captain late R.A.V.C. (T.F.). Graduated London, July 10th, 1899. Died October 27th, 1956, aged 79 years.

PRATT, John Rawnsley, Ruebury House, Osmotherley, Northallerton, Yorks. Graduated London, February 21st, 1920. Died October 31st, 1956, aged 57 years.

COMING EVENTS

November

14th (Wed.). General Meeting of the Scottish Metropolitan Division, B.V.A., at the Royal (Dick) School of Veterinary Studies, Edinburgh, 4.30 p.m.

General Meeting of the Lancashire Division, B.V.A., at the University Veterinary Hospital, Liverpool, 2.30 p.m.

15th (Thurs.). Autumn Meeting of the Eastern Counties Veterinary Society at the Suffolk Hotel, Bury St. Edmunds, 11.45 a.m.

Meeting of the Essex Veterinary Society at the Institute of Agriculture, Writtle, Nr. Chelmsford, Essex, 7.30 p.m.

General Meeting of the Herts and Beds Division, B.V.A., at the Red Lion Hotel, Luton, 7.30 p.m.

16th (Fri.). Dinner-Dance of the Yorkshire Division, B.V.A., at the Royal Station Hotel, York.

22nd (Thurs.). Annual Dance of the Victoria Veterinary Benevolent Fund, County of Ayr Ladies' Guild at Western House, Ayr, 8 p.m.

22nd and 23rd (Thurs. and Fri.). B.V.A. Conference on Supplements and Additives in Animal Feedingstuffs at the Victoria Halls, Bloomsbury Square, London, W.C.1.

26th (Monday.). Annual Dinner of the Centaur Society at the Grand Hotel, Bristol, 7 p.m.

30th (Fri.). Ordinary General Meeting of the Royal Counties Division, B.V.A., at the Caversham Bridge Hotel, Reading, 2.30 p.m.

December

4th (Tues.). Special Meeting of the Technical Development Committee, B.V.A., at 7, Mansfield Street, London, W.1, 10.30 a.m., to discuss bovine mastitis.

6th (Thurs.). General Meeting of the Central Division, B.V.A., at the Royal Veterinary College, Camden Town, N.W.1, 6 p.m.

General Meeting of the Western Counties Division, B.V.A., at the Rougemont Hotel, Exeter, 2.30 p.m.

FOOT-AND-MOUTH DISEASE

The Foot-and-Mouth Disease Infected Area around Chearsley, Buckinghamshire, has been released from all restrictions as from November 7th, 1956.

The area described in the Schedule below is declared to be an Infected Area for the purpose of preventing the spread of foot-and-mouth disease.

IN THE COUNTY OF PEMBROKE

In the Petty Sessional Division of Dewsland: The parishes of St. David's, the Cathedral Close of St. David's, Whitchurch, St. Elvis, Llanhowell, Llanrhian, Llandeloy, Llanreithan, Brawdy, St. Lawrence, St. Edrens, Mathry, Granston, and so much of the parish of Hayscastle as lies to the west of the road running from St. Lawrence via Brimaston to Mountain Water, excluding the said road.

In the Petty Sessional Division of Haverfordwest: The parishes of Haroldston West, Nolton, Roch, and so much of the parish of Camrose as lies to the west of the road running from Mountain Water via Camrose and Pelcomb Cross to Lambston, excluding the said road.

ADDRESSES OF DISEASE INFECTED PREMISES

The list given below indicates, first the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Anthrax

Ayr. Craiksland Farm, Loans, Troon (Oct. 30).

Berks. Home Farm, Bearwood, Wokingham (Nov. 1).

Bucks. Ham Farm, Woodham, Aylesbury (Oct. 29).

Cumberland. Lonsdale Farm, Frizington; Whitbarrow, Greystoke, Penrith (Oct. 30).

Denbigh. Fferwd Farm, Llansannan (Oct. 31).

Hants. Greenwood Farm, Old Odiham Road, Alton (Oct. 29).

Northants. Station Field, Oundle, Peterborough (Oct. 30).

Staffs. Ivy Farm, Gillow Heath, Biddulph, Stoke-on-Trent (Oct. 30).

Sussex. Walberton Place Farm, Walberton, Arundel (Oct. 29).

Wilts. Manor Farm, Charlton, Donhead St. Mary (Oct. 31).

Fowl Pest

Essex. Rochdale, Halstead Road, Eight Ash Green, Colchester (Oct. 31).

Lancs. Newsham Hall Farm, Newsham Lane, Woodplumpton; 95, Southport Road, Scarisbrick, Ormskirk; Woodfield House, Woodplumpton; The Bungalow, Whittle Hill, Newsham Lane, Woodplumpton (Oct. 31); Brookfield Farm, Higher Bartle, Woodplumpton; Smallwood Hey Farm, Pilling; Moorfield, Six Acre Lane, Longton; Brands Wood Farm, Newsham Lane, Woodplumpton; Holme Farm, Pilling; Homestead, Drumacre Lane, Longton, Preston (Nov. 1); The Cedars, Drumacre Lane, Longton; Houghton House Farm, Bartle; Moor House Lane, Longton; Newsham Lodge, Woodplumpton; Bank Hall Farm, Broughton; North View, Smallwood Hey, Pilling; Rosemary Farm, Bartle (Nov. 2); Opposite Legh Arms, Mere Brow, Tarleton; Shaw Cottage, Shaw Lane, Pilling; Glencarry, Smallwood Hey, Pilling; Wellfield, Shirley Lane, Longton; Mill Home Farm, Mill Lane, Fulwood; Winstone Farm, Drumacre Lane, Longton; Lower Hill House Farm, Eaves, Woodplumpton (Nov. 3); Gezzarts Farm, Carleton. Blackpool (Nov. 4).

Norfolk. The Dell, Watton Road, Hingham, Norwich (Oct. 31); The Hall, Hingham, Norwich (Nov. 1).

Swine Fever

Berks. Fairacres, Oakley Green, Dedworth Road, Windsor (Nov. 5).

Hants. Cottesmore Farm, Kingsclere, Newbury (Nov. 5).

Lanark. Neiliain Piggery, Moddiesburn (Oct. 29).

Lancs. Ashton Moss Piggeries, 5, Robinson Lane, Ashton-under-Lyne; Moss Hey Piggeries, Blackpool (Nov. 5).

Middx. Bury Farm, Edgwarebury Lane, Edgware (Nov. 1).

Norfolk. Orchard Farm, Dickleborough, Diss (Oct. 29).

Somerset. Costello Buildings, Yeovilton, Ilchester, and Piggeries at Stonepitt Lane, Limington Road, Ilchester (Oct. 29).

Staffs. French Croft Farm, Aldridge, Walsall (Nov. 5).

Yorks. No. 7 Allotment, Mells Field, Doncaster (Oct. 30).

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

The Use of Dehorning Collodion in Calves

Sir,—I would like to draw attention to a condition in young calves dehorned with caustic collodion.

On October 12th a client dehorned successfully four Friesian calves aged about 10 days, using half a bottle of a proprietary dehorning collodion. No untoward effects were noticed.

On October 27th, *i.e.* 15 days after the dehorning, the client used the remaining half the collodion on a group of three calves about one week old. The next day the calves were "off colour," but still drank their milk. Their temperatures were between 106° and 107° F., and they were given sulphamerazine by mouth and streptomycin by injection.

On October 29th there was no improvement and the temperatures remained high. The treatment was repeated. The following day there still being no improvement, the calves were injected with penicillin and were given sulphadimidine orally. At the time of writing, they were a little more depressed and lay down for longer periods. One was only partially interested in milk.

The horn buds were removed, the horn beds cleaned with surgical spirit, and a penicillin streptomycin ointment applied. It was noticed that the edges of the horn bed were a little thickened and slightly painful.

This client's neighbour had also dehorned a calf on October 30th, using the remaining half of a bottle of dehorning collodion. This had last been used a few months previously. Twenty-four hours later this calf was running a high temperature and was a little depressed. The condition appeared to be caused by the dehorning collodion having been left unused for a period.

I do not understand the reason for this trouble since the contents of the preparation are ether, collodion, and caustic, unless the mixture becomes more concentrated and toxic due to evaporation. If this can happen it ought to be made known to the purchaser.

The question of a general infection must be considered, but I feel in that event, that there would be a response to drugs. In point of fact there was no improvement, nor were the calves markedly toxic. Thus, I suggest, infection can be ruled out. I should greatly appreciate any comments or guidance from colleagues on this matter.

Yours faithfully,
W. J. JONES-DAVIES.

Monk Street,
Abergavenny,
Mon.

October 31st, 1956.

ACTH in the Treatment of Acute Induration of the Bovine Udder

Sir,—May we congratulate Mr. J. C. Hindson in submitting to you, and you for publishing, an article of such interest to the practitioner (*Vet. Rec.* **68.** 732).

Would it not, however, have been of even more value had method, interval, and route of administration of the drug reported on been included?

Yours faithfully,
P. J. DALTON,
M. REDMOND,
K. A. HARRIS.

Old Sarum House,
Stratford Road,
Salisbury.

October 31st, 1956.

DISEASES OF ANIMALS ACT, 1950—GREAT BRITAIN
Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period		Anthrax	Atrophic Rhinitis	Foot-and-Mouth	Fowl Pest	Sheep Scab	Swine Fever
1st to 15th October, 1956		15	2	11	41	—	38
Corresponding period in	1955	31	—	—	24	—	44
	1954	16	—	—	13	—	40
	1953	14	—	—	16	—	62
1st January to 15th October, 1956 ...		1,161	10	127	557	—	630
Corresponding period in	1955	580	5	6	425	—	1,182
	1954	237	4	12	615	—	1,202
	1953	519	—	28	753	—	2,352

TUBERCULOSIS (ATTESTED HERDS) SCHEMES

The number of Attested Herds, *i.e.*, herds officially certified as free from Tuberculosis as at 30th September 1956, was as follows :—

England	Wales	Scotland	Total (Great Britain)
89,775	35,142	38,434	163,351

TUBERCULOSIS ORDER OF 1938

The number of bovine animals slaughtered under the Tuberculosis Order of 1938 during the period 1st July to 30th September, 1956, was 237.